

# REPORTING AN EXPERIMENT LIVE-STREAMING CLASSES IN A DISTANCE LEARNING COURSE

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## ABSTRACT

This paper aims to identify limitations and opportunities for using live streaming for distance learning classes in a course offered at a Brazilian public university. The number of videos on social networks in different fields and about various topics increases each year. Real-time classes are also increasingly being used in distance learning courses. Live streaming through YouTube enables an interactive experience because it allows for images, videos, music, and screenshots to be used during the broadcast. This enhances the experience and interaction between the spectator and presenter and enables real-time discussions. A distance learning course was offered in the first semester of 2019 (between May and July) to foster discussions about pedagogical architectures for the construction of digital competences in Distance Learning (DL). During the course, six classes were live-streamed and broadcast via YouTube. There was one class per week, lasting an average of 40 minutes each and covering distinct topics. This is a qualitative case study with 14 subjects between the ages of 35 and 64. They were primarily female and mainly their mobile devices to watch the classes. Different types of data collection instruments were applied including an online questionnaire and YouTube video platform metrics. The students reported that the classes were essential for interaction and helped to answer their questions due to real-time feedback, which qualifies the teaching and learning processes. The metrics from the YouTube platform revealed that the videos were watched mainly in Brazil and the United States, with over 1,500 views so far, 10% of which had live interactions through chat. This example shows both the range and engagement of students with the live streamed classes as well as the possibilities for interaction. Therefore, live-streamed classes are important for DL courses and should be integrated in planning in order to contribute to the distance learning process.

## KEYWORDS

YouTube, Live Streaming Classes, Distance Learning

## 1. INTRODUCTION

Digital technologies are increasingly becoming a part of people's daily lives, primarily with online videos. Video channels are also growing in popularity on the Internet. This has even prompted the emergence of a new profession, YouTubers, who run these channels and market products.

Today the most diverse videos are available, ranging from full-length series and films to video lessons on how to use products, Do It Yourself projects, and much more complex content including academic studies, mathematical formulas, tutorials, etc. This reality extends to virtual classes, where teachers are using this resource to get closer to their target audience by interacting with them through live videos called live streaming. Therefore, this type of resource should also be included in educational processes, allowing for even more content to be covered and available online.

Live streaming, which can be performed through YouTube, enables an interactive experience because it allows images, videos, music, screenshots, and other features to be included during transmission. The goal is to improve the interactive experience between the spectator and presenter, fostering discussions about the topic at hand.

Hence, during the first semester of 2019, a distance learning course was offered with the objective of fostering discussions about the planning of pedagogical architectures for the construction of digital competences in DL. Approximately 350 people registered for the 30 available spaces and the course concluded with 14 students. The class took place from May to July 2019, consisting of six live classes. The video classes made available on the YouTube platform were an alternative so that students who could not take the course

could also learn about the subject. Thus, in addition to conducting live classes via video streaming on the YouTube channel, they were also made available for later viewing.

This paper aims to describe the experience of this class as a whole, as well as to present the limitations and opportunities of using live streamed video lessons in a distance learning course at a public university in Brazil.

This study is divided into 5 sections. The first is the introduction, the second the theoretical framework, the third presents the methodology, and the fourth data analysis. Finally, the fifth section presents the conclusions.

## **2. LIVE STREAMING VIDEO: A NEW APPROACH TO DISTANCE LEARNING**

Using videos for distance learning is not necessarily novel. Simultaneous transmission of video and audio has occurred since the first generations of DL, allowing content and information to reach the most remote locations and the largest amount of interlocutors.

The earliest forms of video transmission for DL, known as teleclasses or video lessons, were transmitted via television signal. This is considered an important phase in distance learning in Brazil, since people's access to new media such as television significantly expanded and replaced the use of radio in DL. However, interaction between participants was almost nonexistent using this format, because there were only transmitters and receivers (ALVES, 2009).

Subsequently, videoconferencing made visual and audio contact possible among people who were geographically distant. Through satellite lines and the use of cameras, microphones, videos, transmitters, electronic whiteboards and different software, interactions became increasingly possible. Yet they remained restricted to a small number of people who had these tools or through physical presence in a distance learning center (MACHADO, MORAES, 2015).

Currently, there are many opportunities for interaction using new and varied technologies, which allow for the expansion and diversification of strategies. They also enable almost face-to-face interaction between teachers and students, as in the case of tools such as YouTube, that were unimaginable until recently. Through an extremely popular platform, which is used by nearly two billion users worldwide, it has become possible for any platform user to participate in an extension course or a video class. This has increased interaction and virtual presence. According to Coelho and Bottentuit Junior (2019), using YouTube as a teaching tool allows classes to be held in a language that is closer to the students' reality, making the process of assimilation occur in a lighter and more relaxed way. Likewise, it enables greater participation from viewers, since it is a tool that is part of people's daily lives.

Dotta et al. (2018, p. 608) notes that "one of the challenges faced by teachers in DL is to develop effective strategies for conducting dialogue and engaging students in the learning processes." In addition to these challenges, the level of technical fluency also often makes it difficult for students to participate in a course, contributing to their low participation and even leaving the class. However, according to the authors, conducting classes through YouTube favors feelings of empathy and encourages participation, through screen sharing, interaction through image, voice and text, organization of groups, and collaborative activities.

It should be noted that this tool can be used through Internet browsers or applications installed on smartphones or tablets. It is accessible and free, not requiring subscriptions and registrations. Dotta et al. (2018, p. 4), however, warn that classes held in this format should be carried out by a multidisciplinary team, "whose roles are divided so as not to damage the conduct of the class, ensuring the maintenance of interaction between teacher and students and the invisibility of the technical apparatus." Thus, even with the ease enabled by today's tools, the team promoting the class must have the technical and pedagogical knowledge to make the best use of the current possibilities. Therefore, this experiment was carried out with the intention of engaging, reaching out and interacting with the students in the course through an entirely distance learning extension course. The methodology of the research is presented below.

### 3. METHODOLOGY

A qualitative case study approach was used for this study. Fourteen students who completed an extension course offered at a Brazilian public university on the subject of digital competences in education participated in the research. The following instruments were used for data collection:

- An online questionnaire composed of 21 objective and short answer questions, aimed to inquire about the pedagogical strategies used in the live streamed classes.
- YouTube video platform metrics: Comments were used, as well as likes, and views on the videos on the YouTube channel.

The study was developed in three steps, as described below.

#### STEP 1 - Theoretical Framework

Here a survey was conducted of studies that referred the use of live streamed classes as a pedagogical strategy in virtual classes.

#### STEP 2 - Extension Course

The course was planned and offered with the objective of enabling discussions on how to map and build digital competences in distance learning and was held between May and July 2019 for a total of 60 hours. It was organized in a virtual learning environment, offering weekly content, activities and guidelines for the live streamed lessons. Six classes were held once a week covering the following subjects involving distance learning: digital competences, pedagogical architectures, student profile, technological tools, pedagogical strategies, and evaluation. The classes were taught by a total of eleven graduate students and collaborators (Post doctoral) from the university. All of these individuals had a background in education and the use of digital technologies in the DL context. The classes were disseminated through the social networks of the university nucleus, with the support of the university's Department of Distance Learning (SEAD).

In synchronous meetings the students, as well as other participants, could follow the class in real time and ask questions that were answered directly by the teachers, either orally or in writing, through the comments posted on the channel. The university made a studio available for the transmission of classes along with help from a technical team, using the Open Broadcaster Software (OBS Studio) tool for the streaming. The streaming option was chosen for its interactive possibilities, such as the insertion of images, videos, and live screen sharing that the YouTube Live option alone does not offer.

Textual information was gathered during these classes and questionnaires were also distributed which highlighted the weaknesses and opportunities of this type of strategy for DL.

#### STEP 3 - Data Analysis and Data Disclosure

This step was intended to gather and analyze the data collected in the previous step. Moraes' (1999) of content analysis technique was also used. The data analysis is presented below.

### 4. ANALYSIS OF RESULTS AND DISCUSSION

The class consisted of 14 students between the ages of 35 and 64. They were mostly female ( $n = 10$ ) and mainly used mobile devices and personal computers to watch the live streamed classes on the YouTube channel. The profile identified was heterogeneous, as the participants had different backgrounds, but had all completed some graduate studies (they either had a specialization, certificate, or Master's degree).

To analyze the potential and limitations of using live streamed video lectures, it was necessary to separate the short answer and objective responses into categories: Organization, YouTube Live Classes, and channel metrics.

In the category of organization, students pointed out that the planning was adequate and consistent with the proposed objectives. One student stated, "the guidance given to the students was sufficient and everyone could understand the purpose of the activities and do them" (A6). Yet some participants suggested one platform instead of two, being that both a virtual learning environment and the YouTube channel were used.

Comments from students A9 and A3 reveal some general difficulties. "It is important that the entire course be presented on just one platform, so that the student would not have much difficulty finding what they wanted. When I wanted to access the page to watch the video lessons on Monday at 10am there was no time. I was in a rush to find out where everything was, as I often didn't remember where to find the right page" (A9). Another student, A3, agreed, "I believe there could have been a single page/place/environment with all the information. It was all very separate, with many pages." It is therefore important, when using a live video channel on YouTube, to clearly flag only this type of communication so that there is no confusion regarding environments and tools. In addition, using YouTube requires a computer or mobile device (smartphone) with an Internet connection that enables audio and image.

Students also signaled the need to make classes available at more diverse times, as many worked at the time of the live video streaming. One student pointed out, "I suggest that live classes be made available at more than one time" (A1).

The live streamed classes on YouTube were considered pertinent and necessary. The students indicated that they were also satisfied with the type of methodology used. According to student A4, "I believe classes on YouTube were essential during the course." It was also highlighted that this type of approach enables greater interaction between the teacher and student in distance learning because it is possible to establish synchronous social exchanges through the comments that make it possible to answer the questions that may arise at the time from the issues being addressed. As student A12 stated, "the greatest integration I believe was with the videos, they are the ones that brought us closer."

Moreover, the students pointed to the possibility of enriching knowledge through the live classes. Some students (n = 5) stated that the use of the YouTube channel helped in their understanding the course content. "YouTube lessons, resources, and readings were sufficient for understanding the content" (A7). Also, A9 commented that "the video feeds on YouTube were very well presented." And A11 agreed, "I enjoyed and used the weekly video lessons the most. They met the needs I had regarding the subject the best."

The videos were considered innovative, because the interactive classes made it possible to discuss with teachers and guests from the field. This enabled new possibilities and rereading's on the subject. Student A10 and 12 agreed, both stating "the videos innovated a lot!"

Moreover, the metrics available from the YouTube channel platform revealed that the videos were watched mostly in Brazil and the United States. There have been over 1,500 views so far, of which 10% included live interactions through chat. The three main sources for external traffic were Facebook, the University Website, and WhatsApp, as shown in Figure 1:



Figure 1. Traffic Source: External  
Source: YouTube (2019)

YouTube metrics found that the traffic was primarily from Pedagogical Architectures in Distance Learning, Student of Distance Learning, Pedagogical Strategies, Technological Tools in DL and Digital Competences Class, as shown in Figure 2.

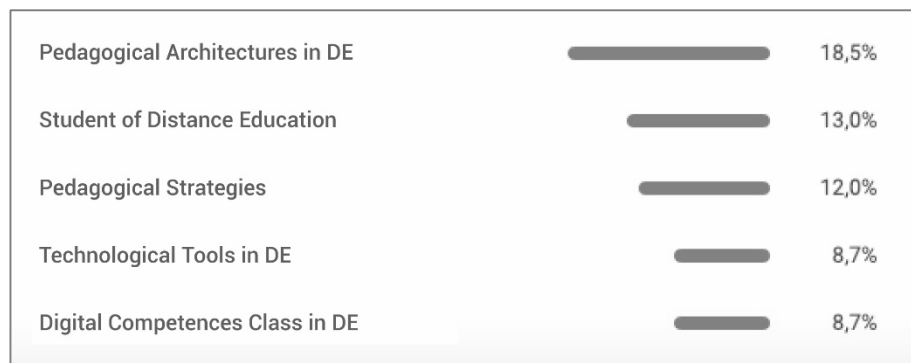


Figure 2. Traffic Source: Suggested Videos  
Source: YouTube (2019)

The origin of traffic from Facebook has to do with how live classes are shared on the research center's page that organized the course using social networks and links that were sent via WhatsApp and shared through social networks. In addition, video sharing was mainly done through WhatsApp and Facebook. The most accessed videos, as shown in Figure 3, were the first two about Digital Competences and Pedagogical Architectures in DL.

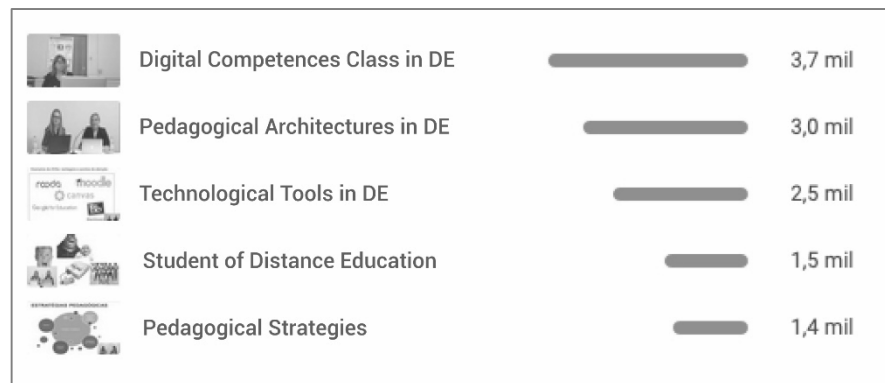


Figure 3. Most accessed videos  
Source: YouTube (2019)

Impressions and how they influence watch time, as shown in Figure 4, are related to the most viewed videos and also depend on video watch time, clicks, average view length, and impressions at viewing time.

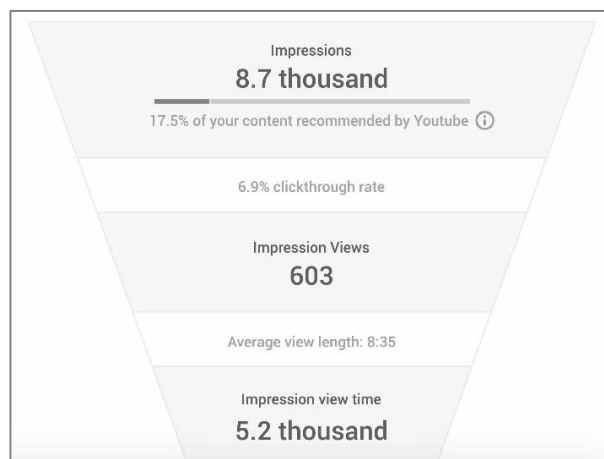


Figure 4. Impressions  
Source: YouTube (2019)

As for the display time in minutes, which can be seen in Figure 5, there was a total of 14,300 minutes with an average view length of 8 minutes. The figure shows that the peak of views is mainly related to when the videos were live streamed, that is, when the classes took place there were higher numbers of views, which continued through the week until the next video class.

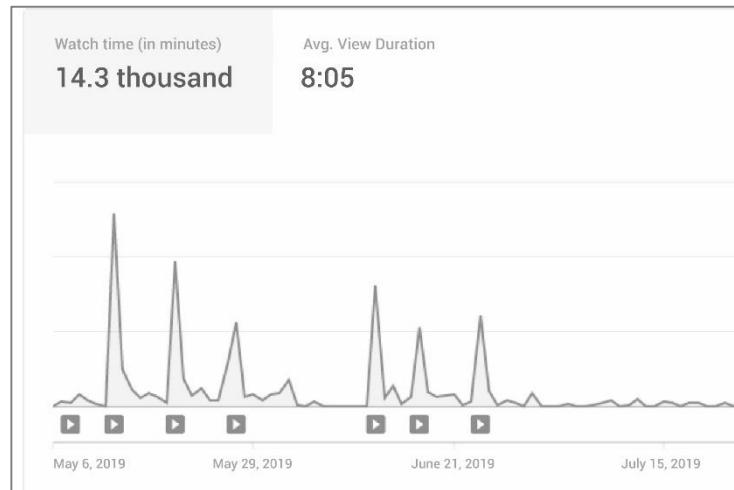


Figure 5. Video display time in minutes  
Source: YouTube (2019)

There has been an increase in subscriptions on the YouTube channel and likes on the Facebook page since this research was conducted. Thus, based on the analysis, it is possible to consider the participation of students through smartphones or tablets as an opportunity. It is also possible to interact with teachers and ask them questions to better understand the content that has already been covered in the course. Finally, when recorded and made available through the YouTube channel, students are able to review classes as needed.

When it comes to the limitations, many students did not participate in the classes due to the time they occurred, always on Monday mornings. The course also focused on two platforms, YouTube and the virtual environment. This was satisfactory but students still had difficulties. The use of different resources generated an excess of information, making it difficult for them to organize. Thus, when thinking about conducting live streamed classes, the teacher needs to provide students with a balance between the student profile and the tools defined for the course.

## 5. FINAL CONSIDERATIONS

As DL becomes a more frequent choice, new strategies and resources focusing on interaction should be enhanced, increasingly becoming the primary option for continuing education for many people. The use of live streamed classes on YouTube was the recommended option for this experiment conducted in a fully distance extension course. This article presented the experiment and identified the primary limitations and opportunities found when using live streamed video lessons in a distance learning course offered at a public university in Brazil. Clearly this strategy is pertinent for virtual classes because it can be used for a larger number of people and also allows for more opportunities for synchronous interaction with students and participants in general.

The study found an increase in users in the social networks of the research group and, through the analysis of metrics available by the YouTube platform, the videos were watched mainly in Brazil and the United States. There have been over 1,500 views so far, of which 10% had live chat interactions.

The video lessons are still available and can be viewed by the general public, thus constituting material for other students and teachers interested in the subject. In addition to the results presented by the platform, the students in the course stated that the classes were essential for interaction and answered their questions through real-time feedback, which qualifies the teaching and learning processes. Based on the data, adjustments will be made to the proposal of live streaming classes and, in 2019/2, a new course will be offered, seeking to

broaden the discussion about the subject and the use of the YouTube platform. This is as an important support tool for the teaching and learning process, especially in distance learning courses. Finally, it is noteworthy that DL has shown concrete results in breaking down the barriers of non-physical presence, by increasingly taking advantage of the potential of technologies. At the same time, it is essential for teachers to understand the importance of training to investigate and share solutions using different and emerging technologies.

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